

Precision Vapor Deposited Coatings for Detector and Optical Coupling Applications

Completed Technology Project (2013 - 2014)



Project Introduction

Multilayer thin films comprised of superconductors, normal metals, and dielectrics will be investigated. Fabrication of nanoporous metals for use as a stable absorber coating in high radiation environments will also be studied. The primary emphasis of this work will be development of the required process control to use the new deposition system to produce reproducible and stable coatings for detector and optical applications.

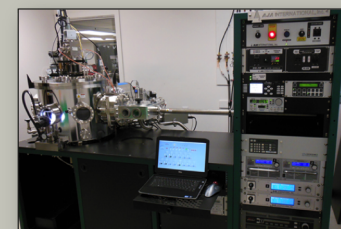
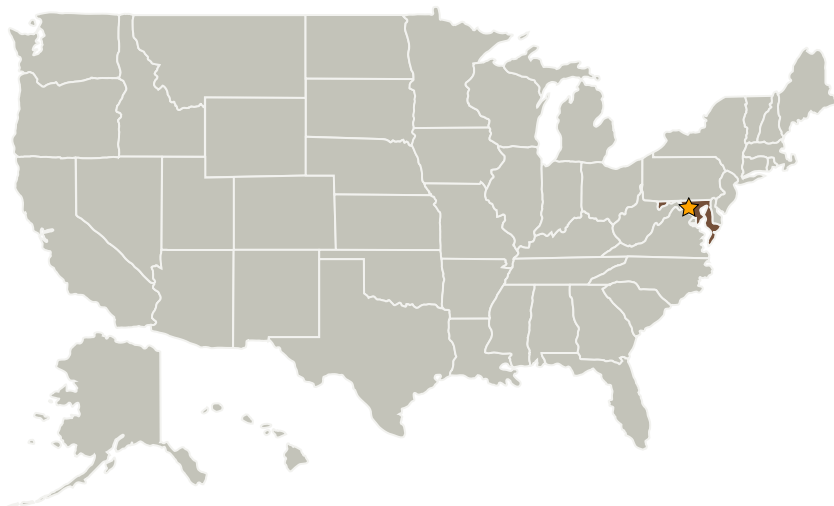
In this effort the following tasks will be addressed:

- 1) Develop reliable multilayer coatings for transition edge detectors, kinetic inductance films, and optical coatings.
- 2) Develop novel alloy films by depositing multiple materials simultaneously on test substrate wafers.
- 3) Characterization of electrical/optical properties and process repeatability.

Anticipated Benefits

The coatings developed in this project have general applicability for sensors planned for used in NASA missions such as CMBpol, ATHENA, SOFIA, other...

Primary U.S. Work Locations and Key Partners



Sputtering Deposition System

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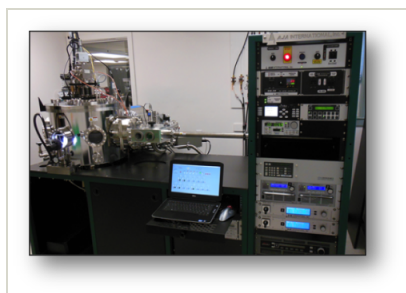


Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations

Maryland

Images



Sputtering Deposition System

Sputtering Deposition System
(<https://techport.nasa.gov/image/3054>)

Project Website:

<http://aetd.gsfc.nasa.gov/>

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Center Innovation Fund: GSFC CIF

Project Management

Program Director:

Michael R Lapointe

Program Manager:

Peter M Hughes

Project Manager:

Michael A Johnson

Principal Investigator:

Edward J Wollack

Co-Investigators:

Kongpop U-yen
Manuel A Quijada
Ari D Brown
Shahid Aslam

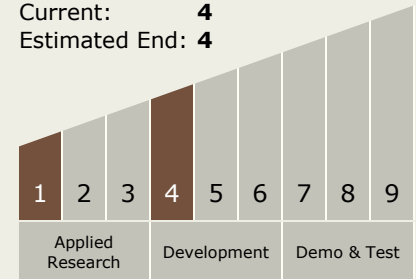
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Technology Maturity (TRL)

Start: **1**
Current: **4**
Estimated End: **4**



Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.1 Remote Sensing Instruments/Sensors
 - └ TX08.1.1 Detectors and Focal Planes